

Applicant: Peter W. J. Jones
U.S.S.N.: 09/094,052
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REMARKS

Applicant appreciates the Examiner's thorough examination of the subject application and requests reconsideration of the subject application based on the foregoing amendments and the following remarks.

Claims 1, 4,5, 7 and 11-15 are pending in the subject application.

Claims 2-3, 6 and 8-10 were previously canceled.

Claim 12 was withdrawn from consideration as the result of an Examiner's earlier restriction requirement. In view of the Examiner's restriction requirement, Applicant reserves the right to present the above-identified withdrawn claims in a divisional application.

Claims 1, 4,5, 7, 11 and 13-15 stand rejected under 35 U.S.C. §103.

35 U.S.C. §103 REJECTIONS

Claims 1, 4,5, 7, 11 and 13-15 stand rejected under 35 U.S.C. §103 as being unpatentable over the cited prior art for the reasons provided on pages 2-10 of the above-referenced Final Office Action. The following addresses the specific rejections provided in the above-referenced Office Action.

CLAIMS 1, 4,5, 7, 11 & 14-15

Claims 1, 4,5, 7, 11 and 13-15 stand rejected under 35 U.S.C. §103 as being unpatentable over Jones [USP 4,929,055] in view of Softly [USP 4,365,866] both already of record. Applicant respectfully traverses as discussed below.

Applicant claims, claim 1, an apparatus for reducing reflection on a surface of an optical lens assembly that is configured so as to have a wide field of view (FOV), said surface corresponding to an input end of the lens assembly in which is inputted light of images being viewed. Such an apparatus includes a plurality of concentric circular vanes, mounted in front of the reflective surface, each of the vanes including a first end proximate said surface, and a second end distal from the lens surface. Also, the first ends of the plurality of vanes are spaced apart from each other at a different distance than the second ends of the plurality of vanes are spaced apart from each other.

In addition, the first ends of the plurality of vanes are spaced further apart from each other than the second ends of the plurality of vanes where light from an image to be viewed enters the second ends and exits the first ends and passes to the lens assembly input end. Further, the plurality of concentric circular vanes are arranged such that light reflecting from the lens surface is essentially not viewable by an observer located distal from the second ends and so that a user viewing through the lens assembly can observe the image corresponding to the wide field of view of the lens assembly.

As indicated by Applicant in the prior submitted Preliminary Amendment, claim1 had been amended so as to clearly indicate that the user of he assembly is viewing the images to be viewed through the apparatus and that the reflections from the surface of the lens assembly (*i.e.*, lens surface) are not viewable by an observer that is distal from the second ends of the apparatus of the presently claimed invention.

Applicant has made the following observations in the subject application regarding the teachings and disclosures of the Jones reference.

An existing method of reducing or eliminating such reflections is to put a honeycomb grid of tubes in front of the objective lens (as is described in U.S. Patent #4,929,055, which is fully incorporated herein by reference). The tubes in these devices have walls that are parallel to the optical axis of the device to which it is fitted.

This technique, however, is not an effective solution with wide-angle FOV devices, since if the length-to-width ratio of the tubes which make up the honeycomb of parallel-walled tubes is shallow enough not to vignette the view through the optic, then the tubes are not deep enough to give affective glint protection. This means that in a battlefield situation, wide-angle FOV optical devices are vulnerable to being detected by an enemy [*sic.*], and thus dangerous to use.

Accordingly, it is highly desirable, if not necessary, to devise other techniques for substantially preventing reflections from the reflecting surfaces of wide-angle FOV optical devices.

As can be seen in FIG.1, a reflective element 1 of an optical device 2 can reflect light rays 5 from a light source 3 to an observer 4. The Observer 4 includes sophisticated light detection systems possibly operating in the infrared

and ultraviolet spectrums as well as human or animal observers.

An existing method of hiding such reflections is shown in FIG 2. where a honeycomb of parallel-walled tubes 6 is placed in front of the optical device 2. The walls of the tubes are parallel to the optical axis of the device to which it is fitted. This collection of tubes 6 prevents light from a source 3 from reflecting to an observer 4.

As shown in FIG. 3, the length-to-width ratio of the tubes 12 that make up the honeycomb cannot exceed the length-to-width ratio of the FOV 13 of the optical device to which it is fitted. In this way, the anti-reflection shield does not restrict field of view seen through the optical device.

As shown in FIG 4, an example of this would be the U.S. Army's PVS-7 night vision goggles, which have a FOV 13 of 40°. If one were to use the existing method of reflection protection, the length-to-width ratio of the deepest (longest) tubes 6 that could be used in a conventional anti-reflection shield are 1:1.38. This is not deep enough to give good glint protection. If deeper tubes are used, they would intrude on the FOV and vignette the image seen through the device, as illustrated in Fig. 5.

The problem has been how to get tubes long enough to provide effective glint protection without vignetting the view through the optic.

It appears the principal basis for the Examiner's rejection is the language appearing in col. 5 line 35 through col. 6 line 16 which provides as follows:

The tubular elements shown in the various above described embodiments of the invention are generally positioned so as to be substantially orthogonal to the reflective surface with which they are used. In some applications, it may be desirable to arrange them so that they are at other than a 90° angle with respect

to the reflective surface in question. For example, FIG. 10 depicts an anti-reflective structure used with a non-optical device, the term non-optical being used here in the sense that the device does not provide any optical magnification. Such a device might be a mirror or a glass surface, such as a vehicle windshield 30 shown diagrammatically in FIG. 10 in a top view thereof. The vanes 31 which form the elements 32 are generally placed at various angles α other than 90° , with respect to the reflective surface of windshield 30 so as to follow the natural sight lines in the horizontal direction of an observer 33 looking through the windshield. FIG. 11 shows the vanes as positioned in the vertical direction wherein such vanes can be, if desired, arranged generally orthogonally to the windshield surface, the tubular elements of the overall structure being thereby positioned at various angles with respect to the reflective surface of windshield 30. The aspect ratios of each of the honeycomb-like elements 34, which are so formed, are selected to be substantially the same and can be selected as exemplified in FIG. 12. As seen therein, an exemplary aspect ratio (x/y) is depicted by the sides of rectangle 35 as shown. A desired aspect ratio can be selected to reduce reflections from sunlight, for example, which is expected to be directed at an angle with respect to the horizontal. For example, if the aspect ratio (x/y) of rectangle 35 is selected, reflections to an observer 36, for example, would be substantially reduced for sunlight angles greater than θ , but would not be so reduced for angles less than θ . Accordingly, the minimum angle from which sunlight is expected to be directed at the surface of the windshield 30 during use can be estimated, and the aspect ratio of elements 34 is appropriately selected as shown in FIG. 12 to reduce reflections of sunlight directed at such minimum angle, or greater.

Structures in accordance with the invention can be relatively easily fabricated for use with the surfaces of many different types of optical devices or other reflective surfaces. Thus, in addition to use on binoculars, telescopes, periscopes, and the like, the structure can be used on vehicular windshields, head lamps, or side view mirrors, or the like.

It first should be noted that in the language referred to above, the example is for a non-optical device which as indicated in the patent is a device that does not provided magnification.

Secondly, there is no indication anywhere in Jones of the problem identified in the subject application (problem has been how to get tubes long enough to provide effective glint protection without vignetting the view through the optic). There also is no suggestion anywhere in Jones that the solution to this problem is having the vanes arranged such that light reflecting from the lens surface is essentially not viewable by an observer located distal from the second ends and so that a user viewing through the lens assembly can observe the image corresponding to the wide field of view of the lens assembly.

As noted above and in the subject application, the problem with the device and methodology disclosed in Jones was that the image that would be ordinarily seen when using an optical device or lens assembly having a wide angle field of view, is that a part of the image is being blocked by the outwardly extending tubular members thereby vignetting the view through the optical device or lens assembly.

What the Examiner has failed to show is that the disclosures in Jones or Softly, alone or in combination reasonably apprises one skilled in the art of the problem and the particular

solution to the problem as is taught in the subject application. There also is no showing why or how one skilled in the art would upon reading the disclosure in Jones or Softly, alone or in combination, would have been taught and also would have understood that a wide angle field of view image would not be completely blocked by the outwardly extending circular vanes if the angle thereof was adjusted as taught by Applicant while at the same time maintaining the capability of not reflecting light to an unwanted observer. It was Applicant in developing the present invention who realized that the user or would looking through the optical device or lens assembly would perceive the entire image observable with a wide angle optical device or lens assembly even though a portion of the reflection reducing apparatus (*e.g.*, a portion of a vane) may occlude a portion of the image. Such occlusion while it may appear as a decrease in intensity will not cause a loss of image. Thus, the vane adjusting language allegedly in Jones and identified in the Office Action does not teach one skilled in the art that there would not be blockage of part of the image be viewed by a wide angle field of view optical device or lens assembly if the reflection reducing structure described in Jones was modified so as to embody the characteristics claimed and taught in the subject application. In fact, one skilled in the art would have continued to believe that the occlusion of the image in any degree would mean that the image could not be fully perceived.

The Examiner also disagrees with the assertion that the reconstruction of the references is a hindsight reconstruction. Applicant would only note in this regard, that the Examiner's asserted basis as to why one skilled in the art would have combined the art in the suggested

fashion was “for the purpose of reducing the light reflection while still maintaining the wide field of view of the optical device.” It is interesting that the only place where one finds such a teaching is the subject application. The specific problem identified by applicant and solved by applicant is not described or found anywhere in Jones. While Jones does make reference to field of view, there is no specific reference that the structure described and taught in Jones when mounted orthogonally to the lens assembly or optical device would vignette the image being viewed if the optics were such as to provide a wide-angle field of view. This is not surprising as a text search of the issued patent available on the USPTO web site reveals that the phrase “wide angle” is not found in the issued patent. As to Softly, this reference clearly does not embody an optical device, however, a text search of the issued patent available on the USPTO website also reveals that the phrase “wide angle” is not found in the patent either.

In sum, Jones and Softly alone or in combination do NOT (a) provide any teaching of the problem identified in the subject application, and (b) provide any discussion directed to solving the problem identified in the subject application much less (c) use the phrase “wide angle” therein. Thus, it can hardly be said that Jones or Softly, alone or in combination provides any motivation, teaching or suggestion to combine the teachings of the two references in the manner claimed by Applicant so as to thereby yield an apparatus that can solve the problem identified by Applicant.

In other words, the only document teaching the problem and its solution is the subject application. Thus, Applicant again suggests that the asserted combination is not based on the

teachings of the references but is a combination of selective teachings of the individual references based on the disclosures and teachings of the subject application and therefore constitutes a hindsight reconstruction of the prior art.

As to claims 4,5, 7, 11 and 14, these each depends from claim 1, which claim as indicated herein is considered to be allowable. As such, at least because of the dependency from a base claim that is believed to be allowable, each of claims 4, 5, 7, 11 and 14 also is considered to be allowable. This shall not be construed as an admission that these claims are not separately patentable from the cited combination of references.

Applicant also respectfully submits that the foregoing remarks distinguishing claim 1 from the cited art also at least applies to distinguish claim 15 from the cited combination of references.

It is respectfully submitted that claims 1, 4,5, 7, 11 and 14-15 are patentable over the cited reference(s) for the foregoing reasons.

CLAIM 13

Claim 13 stands rejected as being unpatentable over Jones [USP 4,929,055] in view of Softly [USP 4,365,866] and further in view of Brennan already of record.

As to claim 13, this claim depends from claim 1, which claim as indicated herein is considered to be allowable. As such, at least because of the dependency from a base claim that is believed to be allowable, claim 13 also is considered to be allowable. This shall not be construed

as an admission that claim 13 is not separately patentable from the cited combination of references.

It is respectfully submitted that claim 13 is patentable over the cited reference(s) for the foregoing reasons.

The following additional remarks shall apply to each of the above.

As provided in MPEP 2143.01, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F. 2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F. 2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). As provided above, the references cited, alone or in combination, include no such teaching, suggestion or motivation.

Furthermore, and as provided in MPEP 2143.02, a prior art reference can be combined or modified to reject claims as obvious as long as there is a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Additionally, it also has been held that if the proposed modification or combination would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. Further, and as provided in MPEP-2143, the teaching or suggestion to make the claimed combination and the reasonable suggestion of

success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). As can be seen from the forgoing discussion regarding the disclosures of the cited references, there is no reasonable expectation of success provided in any of the references as to the claimed invention.

The Federal Circuit also has indicated that a prior art reference that gives only general guidance and is not all that specific as to particular forms of a claimed invention and how to achieve it, may make a certain approach obvious to try, but does not make the invention obvious. *Ex Parte Obukowicz*, 27 USPQ2d 1063, citing *In re O'Farrell*, 853 F.2d 894, 7 USPQ2d 1673,1681 (Fed. Cir. 1988).

As the Federal circuit has stated, "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." *In re Fritch*, 972 F.2d 1260,1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992). Obviousness may not be established using hindsight or in view of the teachings or suggestions of the inventor. *Para-Ordance Mfg. v. SGS Importers Int'l, Inc.*, 73 F.2d 1085, 1087, 37 USPQ2d 1237, 1239 (Fed. Cir. 1995).

It is respectfully submitted that for the foregoing reasons, claims 1, 4,5, 7 and 11-15 are patentable over the cited reference(s) and satisfy the requirements of 35 U.S.C. §103. As such, these claims, including the claims dependent therefrom are allowable.

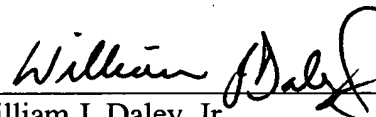
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It is respectfully submitted that the subject application is in a condition for allowance.
Early and favorable action is requested.

Applicant believes that additional fees are not required for consideration of the within
Response. However, if for any reason a fee is required, a fee paid is inadequate or credit is owed
for any excess fee paid, the Commissioner is hereby authorized and requested to charge Deposit
Account No. **04-1105**.

Respectfully submitted,
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